CLAIMS

What is claimed is:

1. An overcoat layer composition comprising an anionic aqueous polyurethane dispersion and a fluorine resin.

2. The overcoat layer composition of claim 1, wherein the fluorine resin is particle-shaped.

3. The overcoat layer composition of claim 1, wherein the fluorine resin is polytetrafluoroethylene (PTFE), polyvinylidenefluoride (PVDF), a fluorinated ethylene propylene copolymer (FEP), a polyethylenetetrafluoroethylene copolymer (PE-TFE), a polyfluoroalkoxy copolymer (PFA), polyvinylfluoride (PVF), or a mixture thereof.

4. The overcoat layer composition of claim 1, wherein the fluorine resin is polytetrafluoroethylene.

5. The overcoat layer composition of claim 2, wherein an average particle size of the fluorine resin is preferably 0.1 to 1μm.

6. The overcoat layer composition of claim 1, wherein the fluorine resin is used in an amount of 20 to 200 parts by weight per 100 parts by weight of solid content of the anionic aqueous polyurethane dispersion.

7. The overcoat layer composition of claim 1, further comprising a fluorine-containing dispersant in an amount of 1 to 10 parts by weight per 100 parts by weight of solid content of the fluorine resin.

8. The overcoat layer composition of claim 1, wherein a fluorine-containing dispersant is a non-ionic compound.

9. The overcoat layer composition of claim 1, wherein the anionic aqueous polyurethane dispersion is obtained by reacting at least one acid anhydride with or without a double bond with at least one kind of triol or tetraol derivatives to prepare a diol or triol monomer, or a mixture thereof containing a carboxyl group or containing both a carboxyl group and a double bond, reacting the resulting product with polyol, and diisocyanate or diisocyanate polymer to acquire a polyurethane prepolymer, neutralizing a carboxylic group of the acquired polyurethane prepolymer using a neutralizer and dispersing the same in water, followed by chain-extending using a chain extending agent.

10. The overcoat layer composition of claim 9, wherein the neutralizer is water-soluble tertiary amine, alkali metal hydroxide or a mixture thereof.

11. The overcoat layer composition of claim 9, wherein the chain extending agent is at least one selected from the group consisting of diol, triol, diamine, triamine, hydrazine and dihydrazide and having two reactive hydrogen atoms and having a molecular weight of 18 to 250.

12. The overcoat layer composition of claim 9, wherein an NCO content of the polyurethane prepolymer acquired is 0.1 to 30%.

13. The overcoat layer composition of claim 9, wherein the water used during dispersion for a total solid content is 5 to 80% and a temperature of the water is in the range of 5 to 80°C.

14. The overcoat layer composition of claim 1, further comprising a polymerization initiator.

15. The overcoat layer composition of claim 1, further comprising water or a mixed solvent of water and alcohol for dilution, the water or mixed solvent being used for the total solid content of the composition.

16. An organic photoreceptor comprising: an electrically conductive support, and a photosensitive layer formed on the electrically conductive support, wherein the photosensitive layer further comprises an overcoat layer composition comprising an anionic aqueous polyurethane dispersion and a fluorine resin.

17. The organic photoreceptor of claim 16, wherein the overcoat layer has a thickness of 0.1 to 5μm.

18. The organic photoreceptor of claim 16, wherein the photosensitive layer has a single layered structure having a charge generating material and a charge transport material.

19. The organic photoreceptor of claim 16, wherein the photosensitive layer has a dual layered structure having a charge transport layer including a charge transport material and a charge generating layer including a charge generating material.

20. The organic photoreceptor of claim 16, wherein the fluorine resin is particle-shaped.

21. The organic photoreceptor of claim 16, wherein the fluorine resin is polytetrafluoroethylene (PTFE), polyvinylidenefluoride (PVDF), a fluorinated ethylene propylene copolymer (FEP), a polyethylenetetrafluoroethylene copolymer (PE-TFE), a polyfluoroalkoxy copolymer (PFA), polyvinylfluoride (PVF), or a mixture thereof.

22. The organic photoreceptor of claim 16, wherein the fluorine resin is polytetrafluoroethylene.

23. The organic photoreceptor of claim 17, wherein an average particle size of the fluorine resin is preferably 0.1 to 1μm.

24. The organic photoreceptor of claim 16, wherein the fluorine resin is used in an amount of 20 to 200 parts by weight per 100 parts by weight of solid content of the anionic aqueous polyurethane dispersion.

25. The organic photoreceptor of claim 16, further comprising a fluorine-containing dispersant in an amount of 1 to 10 parts by weight per 100 parts by weight of solid content of the fluorine resin.

26. The organic photoreceptor of claim 25, wherein the fluorine-containing dispersant is a non-ionic compound.

27. The organic photoreceptor of claim 16, wherein the anionic aqueous polyurethane dispersion is obtained by reacting at least one acid anhydride with or without a double bond with at least one kind of triol or tetraol derivatives to prepare a diol or triol monomer, or a mixture thereof containing a carboxyl group or containing both a carboxyl group and a double bond, reacting the resulting product with polyol, and diisocyanate or diisocyanate polymer to acquire a polyurethane prepolymer, neutralizing a carboxylic group of the acquired polyurethane prepolymer using a neutralizer and dispersing the same in water, followed by chain-extending using a chain extending agent.

28. The organic photoreceptor of claim 27, wherein the neutralizer is water-soluble tertiary amine, alkali metal hydroxide or a mixture thereof.

29. The organic photoreceptor of claim 27, wherein the chain extending agent is at least one selected from the group consisting of diol, triol, diamine, triamine, hydrazine and dihydrazide and having two reactive hydrogen atoms and having a molecular weight of 18 to 250.

30. The organic photoreceptor of claim 25, wherein an NCO content of the polyurethane prepolymer acquired is 0.1 to 30%.

31. The organic photoreceptor of claim 25, wherein the water is used during dispersion for a total solid content is 5 to 80% and a temperature of the water is in the range of 5 to 80°C.

32. The organic photoreceptor of claim 16, further comprising a polymerization initiator.

33. The organic photoreceptor of claim 16, further comprising water or a mixed solvent of water and alcohol for dilution, the water or mixed solvent being used for the total solid content of the composition.

34. An electrophotographic imaging method using liquid toner, the method comprising:

electrostatically charging a surface of an organic photoreceptor having an electrically conductive substrate, and a photosensitive layer formed on the electrically conductive substrate,

exposing the charged surface of the organic photoreceptor to light, dissipating a charge in illuminated areas, forming a pattern of charged and uncharged areas;

depositing the liquid toner on the surface to the organic photoreceptor creating a toner image on the surface of the electrically conductive substrate;

transferring the image to a receiving surface;

repeating the imaging process a predetermined amount of times,

wherein the photosensitive layer comprises an overcoat layer composition including an anionic aqueous polyurethane dispersion and a fluorine resin.

35. The electrophotographic imaging method of claim 34, wherein the liquid toner includes an aliphatic hydrocarbon solvent.

36. The electrophotographic imaging method of claim 34, wherein the fluorine resin is particle-shaped.

37. The electrophotographic imaging method of claim 34, wherein the fluorine resin is polytetrafluoroethylene (PTFE), polyvinylidenefluoride (PVDF), a fluorinated ethylene propylene copolymer (FEP), a polyethylenetetrafluoroethylene copolymer (PE-TFE), a polyfluoroalkoxy copolymer (PFA), polyvinylfluoride (PVF), or a mixture thereof.

38. The electrophotographic imaging method of claim 34, wherein the fluorine resin is polytetrafluoroethylene.

39. The electrophotographic imaging method of claim 35, wherein an average particle size of the fluorine resin is preferably 0.1 to 1μm.

40. The electrophotographic imaging method of claim 34, wherein the fluorine resin is used in an amount of 20 to 200 parts by weight per 100 parts by weight of solid content of the anionic aqueous polyurethane dispersion.

41. The electrophotographic imaging method of claim 34, further comprising a fluorine-containing dispersant in an amount of 1 to 10 parts by weight per 100 parts by weight of solid content of the fluorine resin.

42. The electrophotographic imaging method of claim 41, wherein the fluorine-containing dispersant is a non-ionic compound.

43. The electrophotographic imaging method of claim 34, wherein the anionic aqueous polyurethane dispersion is obtained by reacting at least one acid anhydride with or without a double bond with at least one kind of triol or tetraol derivatives to prepare a diol or triol monomer, or a mixture thereof containing a carboxyl group or containing both a carboxyl group and a double bond, reacting the resulting product with polyol, and diisocyanate or diisocyanate polymer to acquire a polyurethane prepolymer, neutralizing a carboxylic group of the acquired polyurethane prepolymer using a neutralizer and dispersing the same in water, followed by chain-extending using a chain extending agent.

44. The electrophotographic imaging method of claim 43, wherein the neutralizer is water-soluble tertiary amine, alkali metal hydroxide or a mixture thereof.

45. The electrophotographic imaging method of claim 43, wherein the chain extending agent is at least one selected from the group consisting of diol, triol, diamine, triamine, hydrazine and dihydrazide and having two reactive hydrogen atoms and having a molecular weight of 18 to 250.

46. The electrophotographic imaging method of claim 43, wherein an NCO content of the polyurethane prepolymer acquired is 0.1 to 30%.

47. The electrophotographic imaging method of claim 43, wherein the water used during dispersion for a total solid content is 5 to 80% and a temperature of water is in the range of 5 to 80°C.

48. An electrophotographic cartridge, comprising:

an organic photoreceptor comprising an electrically conductive support, and a photosensitive layer formed on the electrically conductive support;

a charging device that charges the organic photoreceptor;

a developing device which develops an electrostatic latent image formed on the organic photoreceptor; and

a cleaning device which cleans a surface of the organic photoreceptor;

wherein the electrophotographic cartridge is attachable to or detachable from an image forming apparatus, and

wherein the photosensitive layer further comprises an overcoat layer composition comprising an anionic aqueous polyurethane dispersion and a fluorine resin.

49. The electrophotographic cartridge of claim 48, wherein the fluorine resin is particle-shaped.

50. The electrophotographic cartridge of claim 48, wherein the fluorine resin is polytetrafluoroethylene (PTFE), polyvinylidenefluoride (PVDF), a fluorinated ethylene propylene copolymer (FEP), a polyethylenetetrafluoroethylene copolymer (PE-TFE), a polyfluoroalkoxy copolymer (PFA), polyvinylfluoride (PVF), or a mixture thereof.

51. The electrophotographic cartridge of claim 48, wherein the fluorine resin is polytetrafluoroethylene.

52. The electrophotographic cartridge of claim 49, wherein an average particle size of the fluorine resin is preferably 0.1 to 1μm.

53. The electrophotographic cartridge of claim 48, wherein the fluorine resin is used in an amount of 20 to 200 parts by weight per 100 parts by weight of solid content of the anionic aqueous polyurethane dispersion.

54. The electrophotographic cartridge of claim 54, further comprising the fluorine-containing dispersant in an amount of 1 to 10 parts by weight per 100 parts by weight of solid content of the fluorine resin.

55. The electrophotographic cartridge of claim 54, wherein the fluorine-containing dispersant is a non-ionic compound.

56. The electrophotographic cartridge of claim 48, wherein the anionic aqueous polyurethane dispersion is obtained by reacting at least one acid anhydride with or without a double bond with at least one kind of triol or tetraol derivatives to prepare a diol or triol monomer, or a mixture thereof containing a carboxyl group or containing both a carboxyl group and a double bond, reacting the resulting product with polyol, and diisocyanate or diisocyanate polymer to acquire a polyurethane prepolymer, neutralizing a carboxylic group of the acquired polyurethane prepolymer using a neutralizer and dispersing the same in water, followed by chain-extending using a chain extending agent.

57. The electrophotographic cartridge of claim 56, wherein the neutralizer is water-soluble tertiary amine, alkali metal hydroxide or a mixture thereof.

58. The electrophotographic cartridge of claim 56, wherein the chain extending agent is at least one selected from the group consisting of diol, triol, diamine, triamine, hydrazine and dihydrazide and having two reactive hydrogen atoms and having a molecular weight of 18 to 250.

59. The electrophotographic cartridge of claim 56, wherein an NCO content of the polyurethane prepolymer acquired is 0.1 to 30%.

60. The electrophotographic cartridge of claim 56, wherein the water used during dispersion for a total solid content is 5 to 80% and a temperature of water is in the range of 5 to 80°C.

61. The electrophotographic cartridge of claim 48, further comprising a polymerization initiator.

62. The electrophotographic cartridge of claim 48, further comprising water or a mixed solvent of water and alcohol for dilution, the water or mixed solvent being used for the total solid content of the composition.

63. The electrophotographic cartridge of claim 48, wherein the overcoat layer has a thickness of 0.1 to 5μm.

64. The electrophotographic cartridge of claim 48, wherein the photosensitive layer has a single layered structure having a charge generating material and a charge transport material.

65. The electrophotographic cartridge of claim 48, wherein the photosensitive layer has a dual layered structure having a charge transport layer including a charge transport material and a charge generating layer including a charge generating material.